WE CLAIM:

1. A method of analyzing a signal comprising the steps of:

collecting a signal;

processing the signal to produce data;

inserting the data from the signal into a statistical model to produce statistics;

compiling the statistics using the statistical model to produce a probability density function;

integrating the probability density function to produce a probability distribution function; and

determining a pointing accuracy from the probability distribution function.

2. The method of claim 1, wherein the statistics model is a statistics metric S(t), deriving the statistics metric using a sliding window T across the entire signal X(t) one sample at a time, the sliding window T collecting S(t) at each window T.

3. The method of claim 2, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum excursion in X(t) from $X(t_o)$ in window T and

$$S(t) = \max_{\tau \in [0,T]} |X(t+\tau) - X(t)|$$

4. The method of claim 2, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum peak-to-peak in window "T" and $S(t) = \max(X(t+\tau)) - \min(X(t+\tau))$ where $t \in [0,T]$.

5. The method of claim 2, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a root-mean-square (rms) of X(t) in window T and S(t) = X(t)): X(t+τ) where $t \in [0,T]$.

6. The method of claim 1, wherein the probability density function is a histogram.

7. The method of claim 1, wherein the pointing accuracy is 99.8% of the probability distribution function.

8. A statistics model for analyzing spacecraft attitude pointing stability in a jitter analysis, the statistics model having signals processed to accurately predict the pointing stability in flight comprising the steps of:

defining an ergodic random process statistically and mathematically;

creating a window averaging technique to slide through simulated signals;

building the statistics model;

loading statistics into a statistics metric and creating a probability density function (PDF); and

integrating the PDF to a probability distribution function and reading out a 3-σpointing accuracy against requirements.

9. The statistics model of claim 8, wherein the statistics model is a statistics metric S(t), deriving the statistics metric using a sliding window T across the entire signal X(t) one sample at a time, the sliding window T collecting S(t) at each window T.

10. The statistics model of claim 8, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum excursion in X(t) from X(to) in window "T" and

$$S(t) = \max_{\tau \in [0,T]} \left| X(t+\tau) - X(t) \right|$$

11. The statistics model of claim 8, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum peak-to-peak in window "T" and S(t) = max (X(t+τ)) - min(X(t+τ)) where t$\in$ [0,T]

12. The statistics model of claim 8, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a root-mean-square (rms) of X(t) in window "T" and S(t) = X(t)): X(t+τ) where t$\in$ [0,T]

13. The statistics model of claim 8, wherein the probability density function is a histogram.

14. The statistics model of claim 8, wherein the pointing accuracy is at 99.8% of the probability distribution function.

15. A method for analyzing spacecraft attitude pointing stability in a jitter analysis by processing a limited number of signals to accurately predict the pointing stability in flight, the method comprising the steps of:

defining an ergodic random process statistically and mathematically

creating a window averaging technique to slide through the simulated signals

building the statistics models;

placing the statistics into a histogram and create the Probability Density Function (PDF); and

integrating the PDF to Probability Distribution function and read out the 3-pointing accuracy against the requirements

16. The statistics model of claim 15, wherein the statistics model is a statistics metric S(t), deriving the statistics metric using a sliding window T across the entire signal X(t) one sample at a time, the sliding window T collecting S(t) at each window T.

17. The statistics model of claim 15, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum excursion in X(t) from X(to) in window "T" and

$$S(t) = \max|X(t+\tau) - X(t)|$$
$$\tau \in [0, T].$$

18. The statistics model of claim 15, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum peak-to-peak in window "T" and S(t) = max $(X(t+\tau))$ - min $(X(t+\tau))$ $t \in [0,T]$.

19. The statistics model of claim 15, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a root-mean-square (rms) of X(t) in window "T" and S(t) = X(t)): $X(t+\tau)$ $t \in [0,T]$.

20. The statistics model of claim 15, wherein the probability density function is a histogram.

21. The statistics model of claim 15, wherein the pointing accuracy is at 99.8% of the probability distribution function.

22. A signal processing scheme for analyzing spacecraft attitude stability in a jitter analysis, the scheme processing a limited number of signals to accurately predict a pointing stability in flight, the scheme comprising the steps of:

collecting a signal;

processing the signal to produce data;

inserting the data from the signal into a statistical model to produce statistics, the statistics model is a statistics metric S(t), deriving the statistics metric using a sliding window T across the entire signal X(t) one sample at a time, the sliding window T collecting S(t) at each window T, the statistics metric S(t) is a pointing accuracy;

compiling the statistics using the statistical model to produce a probability density function;

integrating the probability density function to produce a probability distribution function, the probability density function is a histogram; and

determining a pointing accuracy from the probability distribution function, the pointing accuracy is at 99.8% of the probability distribution function.

23. The signal processing scheme of claim 22 wherein the phase recovery filter recovers the phase stability margin.

24. The signal processing scheme of claim 22, wherein the pointing accuracy is a maximum excursion in X(t).

25. The signal processing scheme of claim 22, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a maximum peak-to-peak in window T.

26. The signal processing scheme of claim 22, wherein the statistics metric S(t) is a pointing accuracy, the pointing accuracy is a root-mean-square (rms) of X(t) in window T.